

NON-CONTACT FLUID PARTICLE CLEANER AND METHOD

Abstract

A fluid particle cleaner and method are disclosed. The invention provides a partition to a side of a fluid nozzle to form: a central cavity configured to define the fluid departing the surface into a central cavity vortex; and a side cavity adjacent the central cavity to define fluid escaping from the central cavity into a side vortex. The vortices interact in a counter-rotating and stationary fashion. The strong and smaller central vortex creates an upward air velocity field that forces any airborne particle to move away from the surface. The side vortex is designed to: connect the central vortex velocity field to the vacuum flow and allow airborne particles to remain suspended until they reach the vacuum flow; and create a decelerating field for high speed particles traveling parallel (horizontally) to the surface to increase the residence time in the central vortex with positive vertical velocity.